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⑫ **EUROPEAN PATENT APPLICATION**

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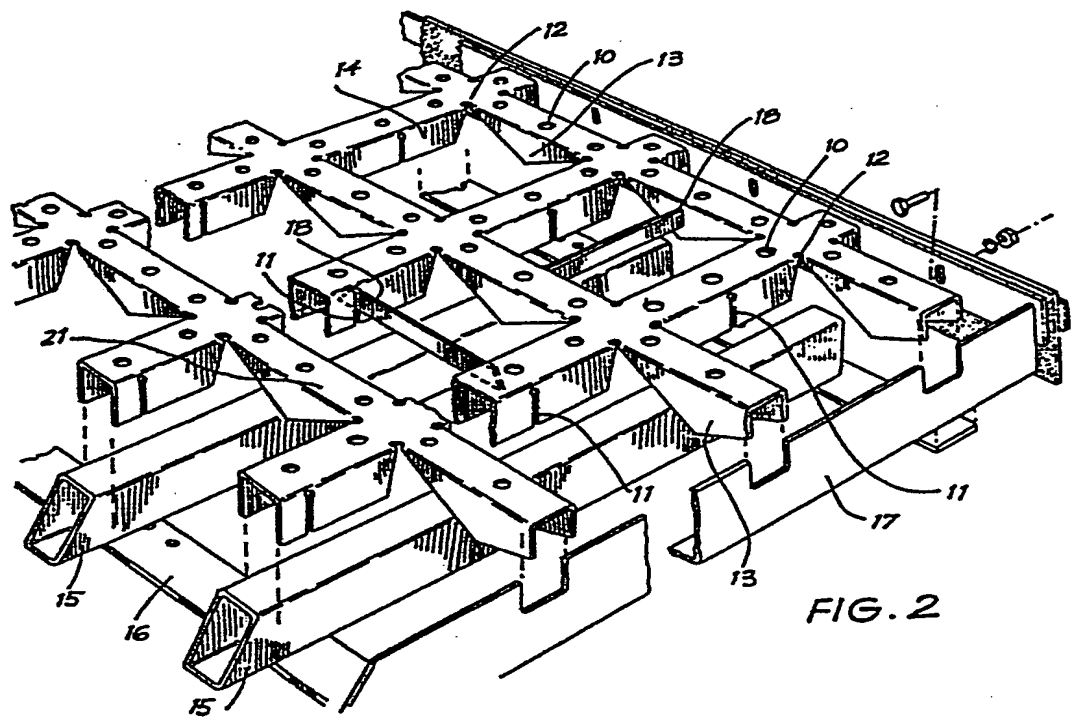
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⑤④ Support frames for screening panels.

⑤⑦ A support frame for screening panels such as are used for screening in the mining industry the panels being moulded casts from plastic materials and secured to a support frame by its spigots the screening-panel being characterised in that a top plate fabricated from flat steel sheets of metal punched and folded to provide a grid of channel section members (21) to support screening panels and in which are formed holes (10) to receive spigot-like projections provided to fasten the panels and includes supports (15) whereby the top plate can be secured to vibrating screen equipment (22).



SUPPORT FRAMES FOR SCREENING PANELS

The present invention relates to a support frame for screening panels such as are available from various manufacturers and used in vibrating screening equipment used, for example, for screening in the mining industry.

5 Screening panels are known to exist which consist of square or rectangular panels moulded or cast from plastic materials. Screening panels of this type, may be supported on a separate frame to which they are fitted by means of plastic spigots protruding through corresponding  
10 holes in the supporting frame, holding the spigots captive. Such spigots may be integral with the screen panel, or integral with a clamping bar which in turn holds the panel(s) captive once in place, or as separate individual parts.

15 To accommodate such fastening methods, the supporting frame is provided with a plurality of holes, shaped and arranged in a pattern complementary to the shape and pattern of fastening spigots, as applicable to the panel manufacturers fastening system, so that panels can be  
20 readily fastened and removed from the frame as required. Support frames are normally made by fabrication from steel, various parts of the frame being joined by welding. The object of the invention is to provide a light weight support frame for screening panels which is  
25 manufactured in such a way that welding is reduced to a minimum and largely confined to the neutral axis of the frame so that under conditions of vibration the likelihood of failure of the welds due to dynamic loads is reduced.

The present invention consists in a screening panel  
30 support frame, consisting of a top plate fabricated from flat steel sheet metal, punched and folded to provide a grid of channel section members to support screening panels and in which are formed holes to receive spigot-like projections provided to fasten the panels, and  
35 means to support the top plate whereby it can be secured

to vibrating screening equipment.

In order that the nature of the invention may be better understood a typical form thereof is hereinafter described, by way of example, with reference to the

5 accompanying drawings in which:-

Figure 1 is a plan view of the top plate of a screening panel support frame according to the invention, after punching and prior to folding;

10 Figure 2 is a perspective view of the screening panel support frame after folding in the course of assembly to an arrangement of support beams, support plates and side members.

15 Figure 3 is a typical cross-section of the screening panel support frame showing weld positions, and

Figure 4 is a cross-sectional view of a portion of the screening panel support frame showing the manner in which section of frame may be joined.

20 The top plate shown in figure 1 is manufactured from a single sheet of mild steel. Into it are punched a series of holes 10 which are intended for reception of spigot-like projections. These are arranged in a regular pattern to enable a complete set of screen panels to be arranged over the surface of the frame with the  
25 projections on the panels passing through the holes 10.

In addition to the holes 10 are punched slots 11 for the reception of transverse members as described below and also holes 12 which are formed at the junction of the lines of severance in the plate to enable folding of the  
30 plate to be effected with a minimum of distortion and to prevent stress concentration.

As will be appreciated from Figure 2 in which the screening panel support frame is seen after folding of the top plate, there are lines of severance between  
35 substantially triangular portions of the plate 13 and

adjacent portions 14 so that when the portions 13 and 14 are folded downwardly as shown in Figure 2, a grid of channel section members is formed. Transverse channel sections 21 are connected to the longitudinal channel sections by means of a single plate thickness join, which acts as a hinge allowing the frame to accept alternating vertical displacement of the longitudinal formed channel sections (relative to each other), as may prevail when dynamically loaded under influence of the vibration of the equipment on which the screening panel support frame is mounted.

The screening panel support frame is supported on support beams 15, of tubular cross sections extending along the frame in one direction. These are attached to holding down strips 16 extending across, between side angle plates 17, one of which has been shown. The holding down strips 16 are fixed in a plane parallel to the plane of the top plate (Fig 1) both of which are connected to regularly spaced support beams 15 thus forming a 3-dimensioned box section type frame work, with sufficient rigidity for handling, but flexible enough to accommodate dynamic movement in the vertical plane of transverse and longitudinal members, without creating excessive stresses, thus preventing fatigue failure. The support beams 15 are secured to the top plate by welds as at 19 in Figure 3 which are largely on or about the neutral axis of the frame and are thus minimally stressed during dynamic flexure of the frame.

Additional panel support may be provided by members 18, extending between the slots 11 and secured in position 9 by welds as at 20 (fig 3) at each end. For the sake of clarity only two such members are shown in Figure 2.

Screening panel support frames as described above can be made in a wide variety of shapes and sizes to suit particular applications.

A complete screening panel support frame for vibrating equipment may be made up of a plurality of separate sections of support screening panel support frame each of which covers a portion of the total area. In joining up such sections it is important to ensure that the regular spacing of holes 10 is maintained and one manner of doing this is illustrated in Figure 4 in which two support beams 15 each forming part of separate sections of a support frame are connected to a cross beam 22 which forms part of the vibrating equipment being secured to it by means of nuts and bolts indicated at 23. The significant feature of the arrangement is the fact that the ends of the support beams 15 are cut at an angle as shown in Figure 4 so that a diagonally extending join 24 is formed. With this arrangement there is no interference with any of the holes 10 which are available for engagement by a spigot-like projection of the screening panel, allowing panels to be positioned across the join.

The embodiment of the invention described above is given by way of example only as constituting a preferred form of construction within the general scope of the invention as defined broadly above.

CLAIMS

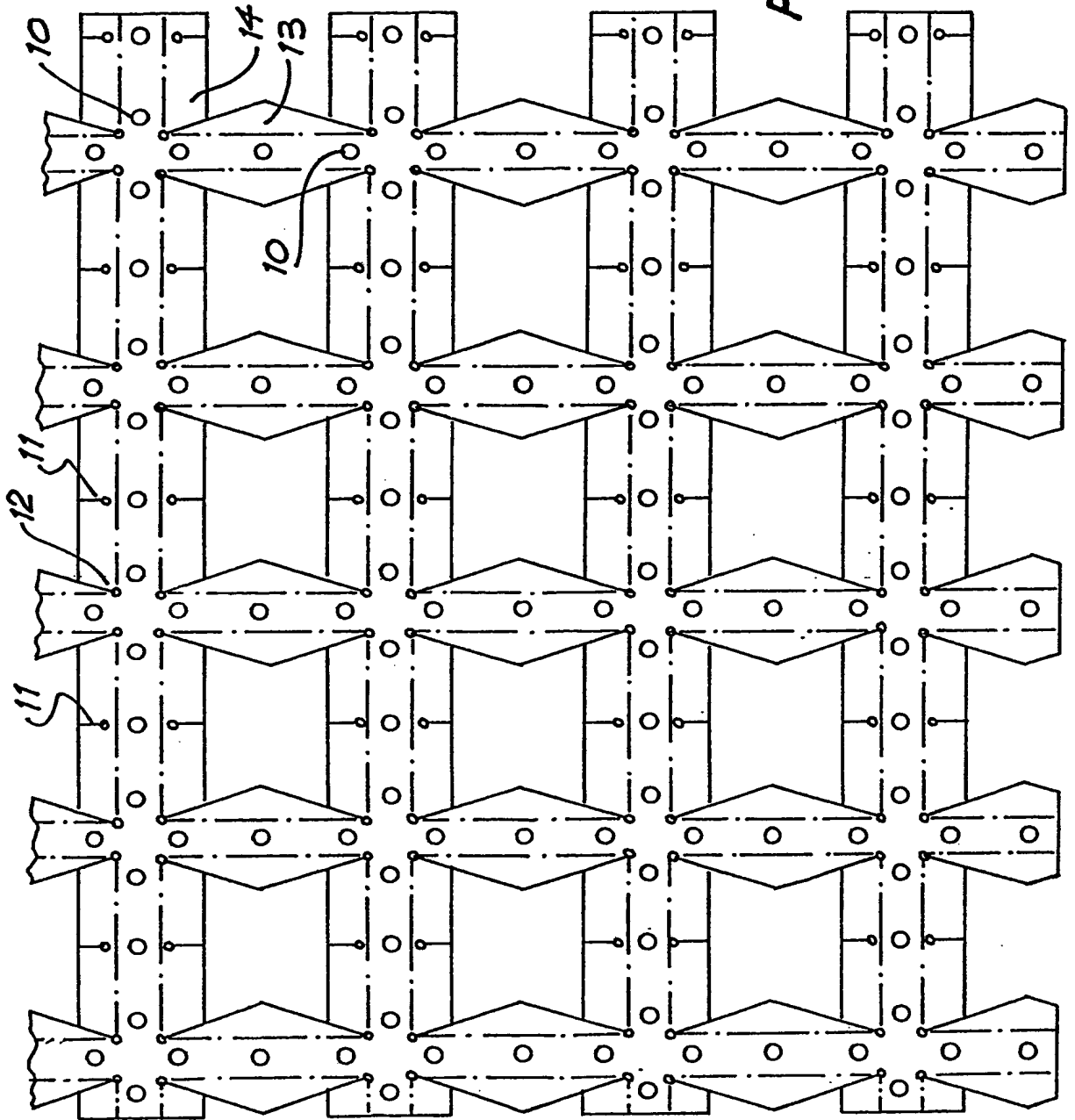
1. A screening panel support frame, consisting of a top plate fabricated from flat steel sheet metal punched and folded, to provide a grid of longitudinally and transversely extending channel section members (21), to support screening panels in which are formed holes (10) to receive spigot-like projections provided to fasten the panels and means (15) to support the top plate whereby it can be secured to vibrating screening equipment.
2. A screening panel support frame as claimed in claim 1 wherein the means to support the top plate consists in a plurality of support beams (15) extending beneath and along the frame, the longitudinally extending channel section members (21) being welded to the support beam by means of welds (19) lying on or near the neutral axis of the frame.
3. A screening panel support frame as claimed in claim 1 wherein the transversely extending channel section members (21) formed in the top plate are connected to the longitudinally extending channel section members by means of a plate thickness join, which acts as a hinge, allowing alternating vertical displacement of the longitudinally extending channel section members relative to each other to be accommodated, without giving rise to fatigue failure, when subjected to dynamic load conditions.
4. A screening panel support frame, as claimed in claim 2 wherein holding down strips (16) are fixed in a plane, parallel to the plane of the formed top plate, both of which are connected to regularly spaced support beams (15), thus forming a 3-dimensional box-section type frame work with sufficient rigidity for handling, but flexible enough to accommodate dynamic movements of the longitudinal (21) and transverse channel section members perpendicular to the plane of the top plate without creating excessive stresses and thus inhibiting fatigue failure.
5. A screening panel support made up of a plurality of



sections each constructed as claimed in claim 4, the support beams of one section meeting the support beams of each adjacent section end to end, the meeting ends of the beams being cut at an angle (24) whereby the ends meet in a line extending diagonally across the beams.

6. A screening panel support frame substantially as described with reference to and as illustrated in the accompanying drawings.

FIG. 1



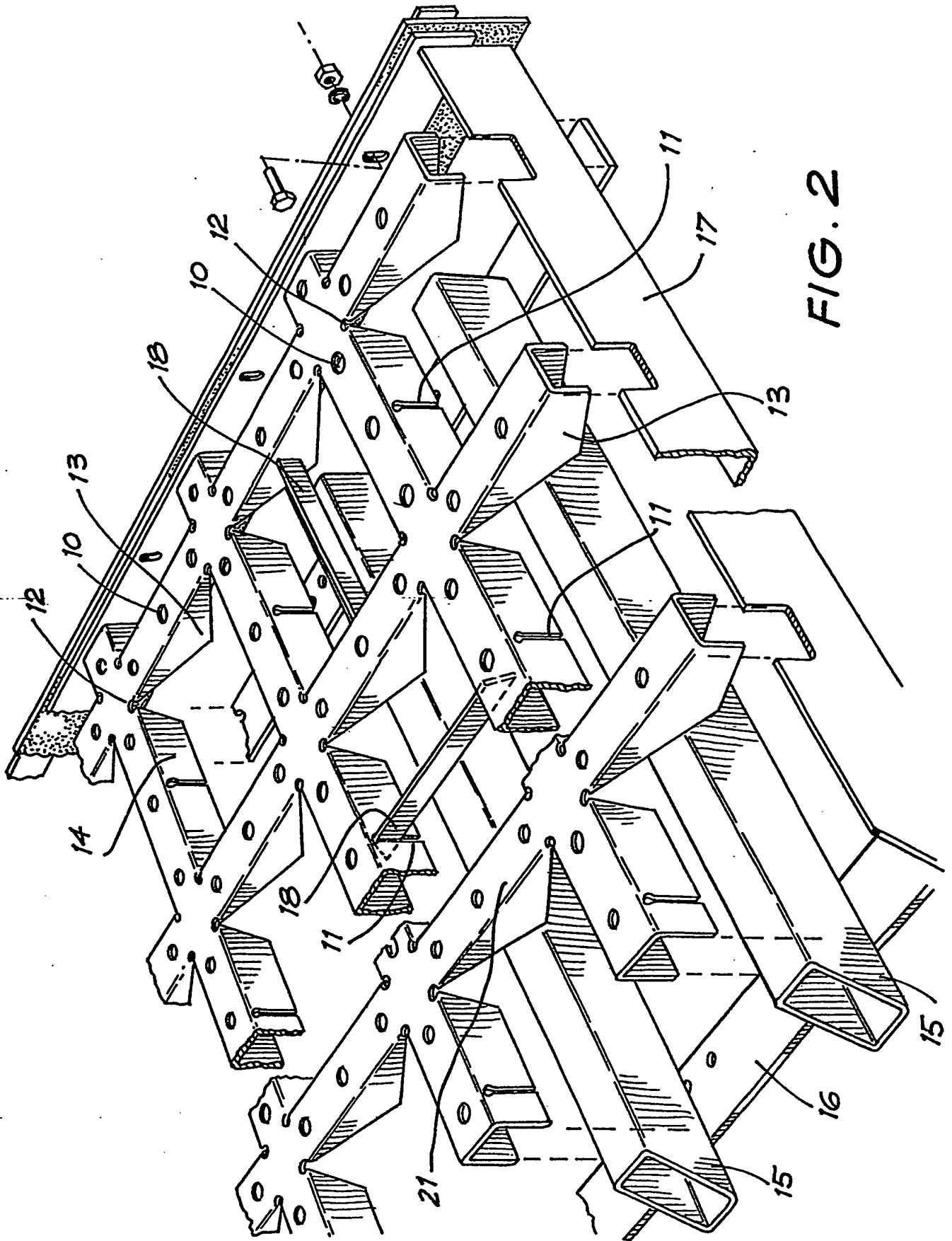


FIG. 2

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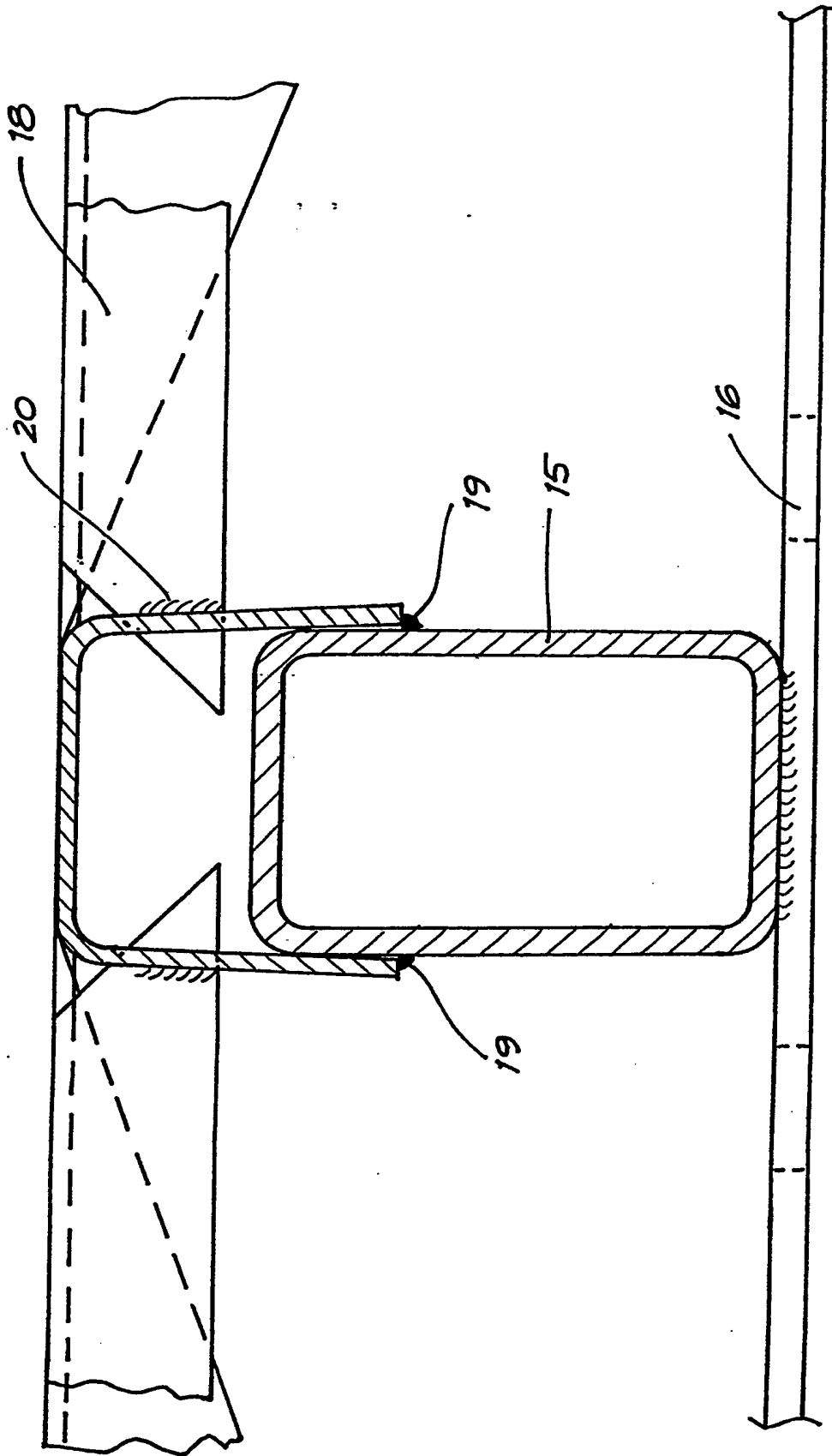


FIG. 3

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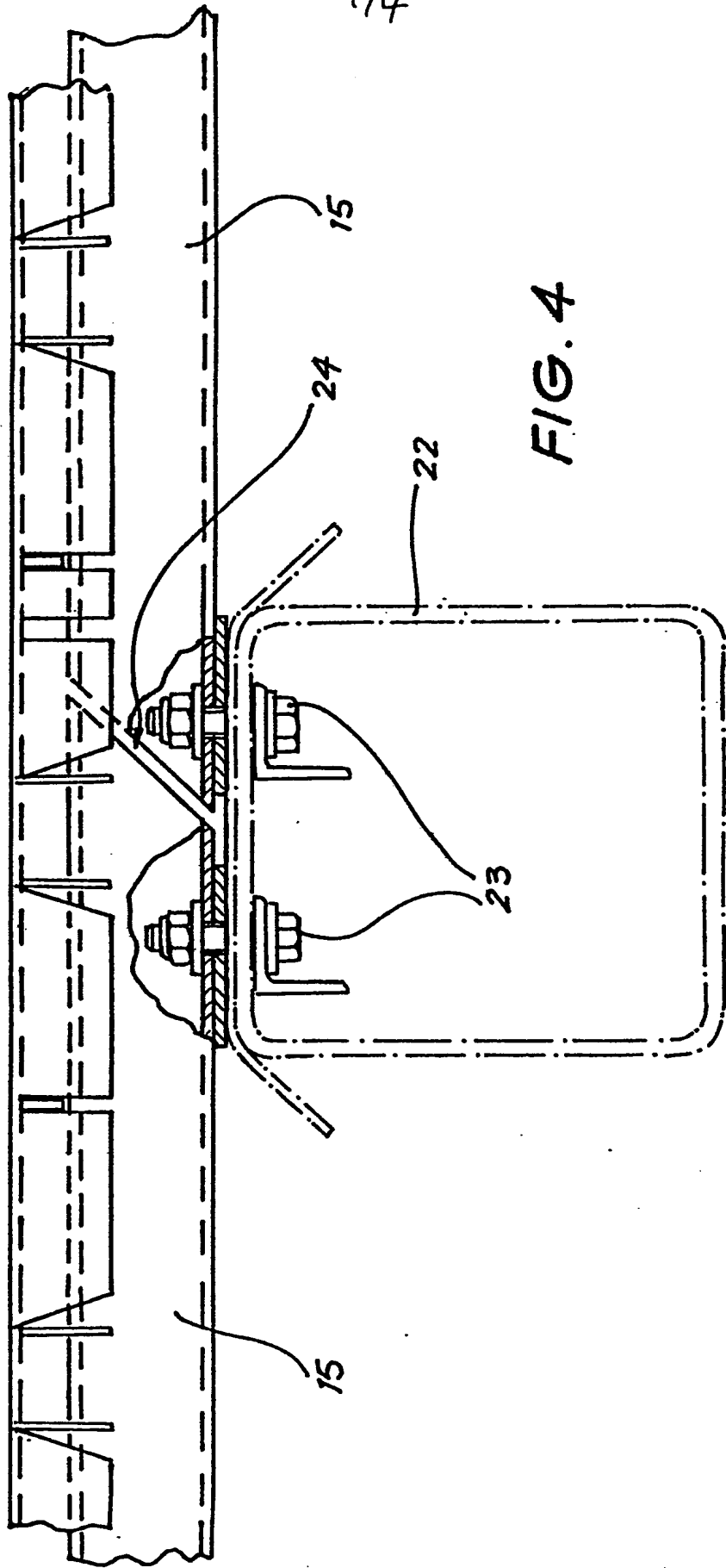


FIG. 4